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ABSTRACT

Student use of microcomputer databases in social studies is discussed. Databases give students and teachers an opportunity to get involved in information storage, retrieval, and analysis. In the process, students develop skills of inquiry, problem-solving, and critical thinking, as well as many of the basic skills needed not only in social studies but in other school subjects and life outside of school. The technology is now available to give students practical, first-hand experience with real-world information management. The article concludes with a bibliography that features both software and readings. (TRS)

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CREATING AND USING DATABASES IN THE SOCIAL STUDIES

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CREATING AND USING DATABASES IN THE SOCIAL STUDIES

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For years, practicing social scientists have observed political, economic, social, and demographic events, using sophisticated computer tools to compile and analyze information. Until recently, this process has been far too expensive to be considered by the pre-collegiate social studies teacher. However, with the availability of inexpensive microcomputers, it is now possible for students to become active social scientists, using the same tools and skills as their collegiate and business counterparts to solve complex problems and answer difficult questions. Students can become involved in collecting, organizing, storing, analyzing, interpreting, and communicating data. Depending on the age and ability level of the students, databases can be used simply for storing factual information or, at a more sophisticated level, they can be used to analyze voting patterns, make population projections, and determine historical trends.

In her book, ***My Students Use Computers***, Beverly Hunter explains computer literacy as an understanding of whatever about computers is necessary to use and coexist with them in an information-based society. The particular skills and knowledge needed will vary from person to person and from time to time. For the computer literate social studies teacher, the ability to understand and use a database fits perfectly into Hunter's definition. The amount of time social studies teachers spend dealing with data makes databases and social studies a natural pairing. In the social studies classroom, information retrieval and analysis are among the most exciting uses of the microcomputer. Good, inexpensive database management programs, make it possible for students to become involved in an aspect of computer usage that will be valuable far beyond their classroom years.

A recent report on computer usage in education ranks social studies teachers nearly last among educators using computers. A separate study, however, shows that social studies teachers are among the most innovative when they do use computers in classes. The use of databases is one example of innovative instructional uses of computers, and can provide an excellent means of introducing this tool into social studies classrooms.

So what do databases do? A database is like an electronic filing cabinet, or a computerized index box. It allows for easy categorizing, storing, and retrieving of information. When information about objects, people, places, ideas or events is properly stored, it can be retrieved in any order or sequence. In social studies, information about countries, geography, population, history, political elections, demography, and other subjects can be stored in a database. The information can then be retrieved in a variety of ways. Imagine having a file box of addresses, for example, that held a separate card for the name, city, street, zip code, phone number birthday, and any other information you had about the person. You could find all correspondents who lived in a city you wanted to visit; you could find the name of all friends whose birthday is next month. As students use and/or create their own social studies databases they:

1. become actively involved in social studies content;
2. learn and apply basic concepts about organizing, storing, retrieving, interpreting and applying information;
3. work cooperatively;
4. learn that information is a social resource and there is a payoff for using it wisely and ethically;
5. learn that computers have limitations.

To conduct a classroom activity using databases in social studies, it is important for the teacher to be very familiar with a database management program. One program that is often selected for use in teacher training workshops is **pfs:file**. This program is relatively easy to learn and use and is available for most major computer systems. In addition, accompanying programs such as **pfs:report** are available to extend the power of the database. After a teacher has become familiar with the selected database program, the following procedures can introduce the class to the potentials of sophisticated data management.

Prepare ahead of time a simple database for students to practice with. Examples might include names and addresses of students in the class; headlines and salient details from one day's newspaper; names and subject interests of teachers in the school. Then have students boot up the database program. Through demonstration with a large-screen monitor or computer projector, show them the main keys used and explain the various messages they see on the screen.

Next, have students search the database to find answers to questions you give them. Do one or two simple searches together so they learn it more quickly. Let them proceed on their own to answer several more difficult questions. This will involve you periodically as you demonstrate how to do partial searches, range searches, greater-than and less-than searches, etc. Allow plenty of time for this so each student feels comfortable with the database program.

After you feel that they are comfortable with the database, demonstrate how to use the print features of the program you have selected. Allow students to do at least two or three prints so they understand how this feature works.

The next step is to show students how they can design their own database. Provide each student with a list of U.S. presidents with several facts about each one. Have them design a database using this sheet. After they have designed the database, they should input the information from the sheet into the database program. When they are finished, provide them with questions they can answer by searching the database. This will help them feel more comfortable with how a database functions and how they can make it work for them. Ask them to bring to the next session their texts and any other reference materials they might require to gather data for their own database. You may wish to assign topics to groups of students so they can share research and design tasks involved in database creation. These databases can become valuable parts of

the class curriculum and can be utilized and added to in future classes.

After students have gathered the information they plan to use, they must begin to design, on paper, the database format. **THIS IS A VERY CRITICAL STEP**. The first item in the data base should be the one they would search by most frequently, such as the name of a state, a country, or a person. When deciding how much space to leave for each item, keep in mind that you must allow enough spaces to do searches. For example, if an item is a year (such as 1964), then you need to leave enough space to do something as lengthy as a range search. Such a search might look like this =1954..1964 and requires seven spaces in addition to the four necessary for the numerals "1964". If there are errors in the original database design, it is usually possible to redesign. However, redesign can be slow and data may be lost.

After the research, design, and input of data has been completed, students will need to test the database by doing some sample searches. Students should be encouraged to make some sample printouts to see how their searches will appear in printed form.

If you have assigned database topics to groups of students, each group should be asked to develop a list of questions based on their data. These questions can be assigned to their peers, or to the entire class (with the database creators serving as class experts) for indepth study on the particular topic. A list of answers and a guide telling how to properly search for each answer could be added. Finally, depending on the information in the database, maps, charts, or other graphics could also be included. An appendix might be added which would be a printout of all of the data in the database. This would be for reference, but could also be used to demonstrate how slow and cumbersome it would be to search for the answers without the computer.

As students become more proficient at using the database to retrieve and organize information, some time should be devoted to using **pfs:report** (or a similar report generating program) to take information from the database file and create much more elaborate reports. **pfs:report** can perform calculations with the data by creating "derived columns". For example, a report may have in Column One, the name of a country, with its population in Column Two. **pfs:report** would allow you to create a derived column, Column Three, which would be Column Two multiplied by one percent. Thus, Column Three would show a one percent population increase for each country. A second derived column, Column Four, could then be created to total columns Two and Three. A teacher could use this as a simulation tool to answer "what if" kinds of questions. **pfs:report** can also print columns sorted either alphabetically or numerically, so you could, for instance, take the countries and have them ranked by population in descending order, saving a lot of tedious work.

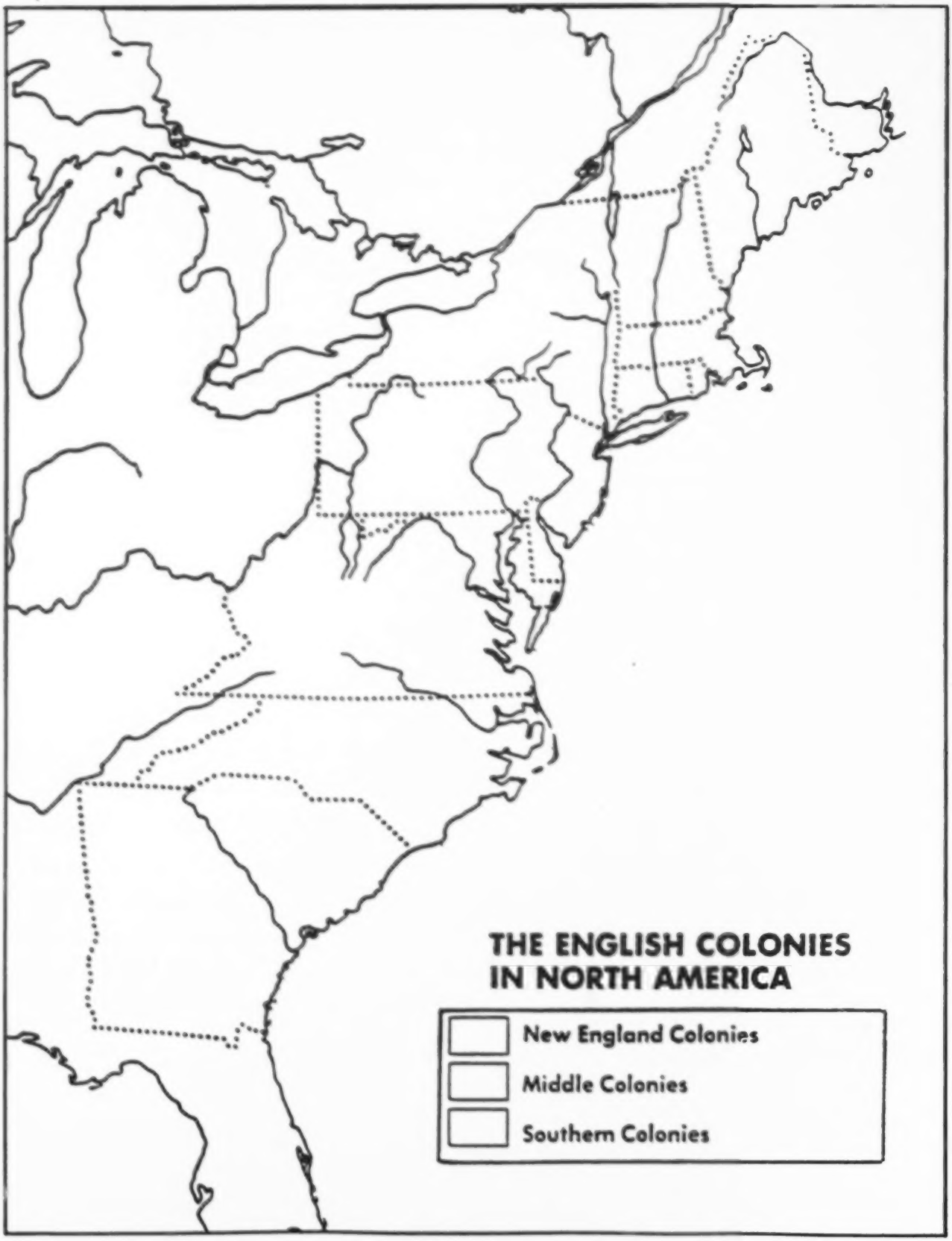
Once students have become proficient in moving around in the database environment, real learning, based on research, synthesis of information, and logical thinking skills can begin to take place. To see how this works, take a look at a sample database lesson below, based on the original American Thirteen Colonies. Because the size of the database is limited, it is a relatively easy one for teachers or students to create. The format and sample questions that follow provide basic information about the thirteen original colonies prior to the American Revolution. The content is designed for the eighth grade curriculum.

The following format can be used to develop a database on the Thirteen Colonies. Specific information in the following categories for each colony must be identified and keyed into the program:

Colony:
Date Settled:
Leader(s):
Type of Colony:
Reasons Settled:
Population in 1730:
Products:
Settled by:
Vocabulary:
Historical Data:

Here is a sample datafile on the Massachusetts colony (similar data on the other twelve colonies may be obtained in printed form by writing **ICCE Thirteen Colonies Data, 902 West New York, ES 2131, Indianapolis, IN 46223**).

Colony:	Massachusetts
Date Settled:	1620
Leader(s):	William Bradford (Plymouth) John Winthrop (Boston)
Type of Colony:	Corporate (1630-1691); Royal (1691-1776)
Reason(s) Settled:	Religious freedom
Population in 1730:	114,000
Products:	Farm products, trade, timber, sugar refineries, fur, iron, fishing, rum distilleries, paper mills
Settled by:	English, other British
Vocabulary:	Mayflower Compact, Puritan, Pilgrim, Separatists, Squanto, Cotton Mather
Historical data:	* The Pilgrims received financial backing from London Puritans and permission from the Virginia Company to settle in its colony. Their leaky, rented ship, the Mayflower, landed in New England—not in Virginia. This was thought not to be an accident since they knew they would not have religious freedom in Virginia, where the established church was the Church of England. * The Pilgrims named their landing site Plymouth. Since no laws existed, they wrote their own, which resulted in the Mayflower Compact. They formed a government of elected lawmakers headed by a governor. The first governor was William Bradford. * The Puritans in England were facing many of the problems the American Pilgrims had, and eventually began to look at the Pilgrim colony as a religious refuge. * The Puritans were able to obtain financial backing and formed the Massachusetts Bay Company. With a charter and a grant of land, they were able to rent ships and transport a thousand colonists to New England. * Members of the Massachusetts Bay Company were the only ones with a role in government. They formed the governing body of the colony. They elected John Winthrop to be head of the Company and the governor of the colony. The General Court was formed as a lawmaking body.


THE ENGLISH COLONIES
IN NORTH AMERICA
New England Colonies
Middle Colonies
Southern Colonies

* The Puritan Church was a forerunner to today's Congregational Church.
* Because the Puritans went to Massachusetts with a plan for a model community, they saw no reason to tolerate anyone who disagreed with them. As they were branded Separatists in England because they disagreed with the established church, so did they brand separatists those who disagreed with them. It was this effort to root out Separatism that led to the founding of Rhode Island by Roger Williams.
* Massachusetts was a New England colony.

After developing (or learning to use) the Thirteen Colonies database, students can develop their data retrieval skills and knowledge of prerevolutionary America by answering the following questions on a **Student Worksheet.**

1. What were the nationalities of the people that settled the colonies?
2. What were three of the major reasons people came to America?
3. Match the following leaders with the colonies they helped to establish:

____George Calvert	a. Virginia
____James Wheelwright	b. Georgia
____Peter Minuit	c. Maryland
____James Oglethorpe	d. Delaware
____John Smith	e. New Hampshire

4. In 1730, which colonies had over 35,000 in population?
5. What colony was established as a buffer from the Spanish?
6. What was a proprietary colony?
7. What was a corporate colony?
8. What was a royal colony?
9. Which colony, at first, depended on deerskin trade for its survival?
10. Who arrived first in America—the Pilgrims or the Puritans?
11. Why was Roanoke called the "Lost Colony"?
12. Which settlement was the "seed" for South Carolina?
13. What crop "saved" Jamestown? Who introduced it to Jamestown?
14. What English king chartered a colony for Catholic refuge?
15. What colony served as a refuge for debtors from English prisons?

Enrichment Questions:

16. What ending date is most common to the thirteen colonies? Why?
17. List the colonies in chronological order, from the first settled to the last. Give the dates settled and the name of the colony.
18. Use the attached map to do the following:
    a. Label each of the thirteen English colonies, including the date when it was settled.
    b. Indicate the New England Colonies, the Middle Colonies, and the Southern Colonies, using a separate color for each group. Complete the key.
19. In what direction(s) did the colonies expand?
20. What reasons do you think the colonists had for expanding in this/these direction(s)?

Elementary teachers who have many subject responsibilities in addition to social studies, should be aware of other ways in which databases can be employed. The following is a short list of possibilities:

1. Book reports
2. Film (or other media) reviews
3. Surveys for newspaper
4. Survey Christmas gifts, input into data base, then do bar graph
5. Mailbag - have computer set up in class with data base program loaded and data disk in drive. Student leaves a message for another student, who can come in and search by his/her own name to see if anyone has left an "electronic" message.
6. Bibliography - excellent way to keep track of references when doing a research paper.
7. Inventories - for textbooks, science equipment, musical instruments, etc.
8. Address file - for students, colleagues, Christmas card list, etc.
9. For any collection - students find this fascinating for keeping records of baseball cards, rocks, dolls, comic books, ad infinitum.
10. Careers database

Databases give students and teachers an opportunity to get involved in information storage, retrieval and analysis. In the process, students develop skills of inquiry, problem solving, and critical thinking, as well as many of the basic skills needed not only in social studies but in other subjects found in school and life. The technology—both hardware and software—is available now, and can make it possible for all students to get practical, first-hand experience with the real world of information.

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